

# METHOD FOR COMBINING A METAL RACKET FRAME WITH A GRIP

## BACKGROUND OF THE INVENTION

### 5 1. Field of the Invention

This invention relates to a method for combining a metal racket frame with a grip, particularly to one able to lighten a racket, having an excellent effect of shock absorption and a smooth and neat appearance after  
10 combined.

### 2. Description of the Prior Art

A conventional method for combining a metal racket frame with a grip is to have a metal tube preset in length bent and shaped in a racket. Next, the racket has  
15 its lower portion with a proper length deposited in a matched mold, and then foaming agent is injected into the matched mold. After the foaming agent is solidified, a grip combined with the metal racket frame is obtained.

However, the conventional method for combining a  
20 metal racket frame with a grip has the following drawbacks.

1. The foam grip is completely solid so it is too heavy.

2. The metal racket frame has its lower ends  
25 extending to the bottom of the grip; therefore, most of the vibration of the racket produced by striking balls will be transmitted to the grip, liable to hurt a user's

hand due to vibration.

## SUMMARY OF THE INVENTION

The objective of the invention is to offer a method for combining a metal racket frame with a grip, in which  
5 a metal racket frame with its two free ends bent in advance is prepared and the two free ends bent are fitted in the upper hollow portion of a grip to form a combined portion, which is then to be placed in preset matched molds. Next, the matched molds are closed, and the metal  
10 racket frame together with the grip placed in the molds are turned upside down, letting the hollow grip face upward. Then liquid resin is injected into the hollow grip through its upper opening. After the liquid resin is solidified, the metal racket frame is integrally combined  
15 with the hollow grip, taken out of the molds.

By this method, the metal racket frame and the grip can be combined together integrally and smoothly. Further, the hollow grip only has a small part combined with the metal racket frame, while its rest part still  
20 remains hollow, able to lighten a racket in a great degree. Furthermore, the metal racket frame and the hollow grip are combined together by means of elastic resin, able to elevate the effect of shock absorption.

## BRIEF DESCRIPTION OF DRAWINGS

25 This invention will be better understood by referring to the accompanying drawings, wherein:

Fig. 1 is a block chart of a method of combining a

metal racket frame with a grip in the present invention:

Fig. 2 is a front cross-sectional view of the lower combined portion of the metal racket frame fitted in the hollow grip in the present invention:

5 Fig. 3 is a front view of the lower cavity of a lower mold of opened matched molds in the present invention;

Fig. 4 is a cross-sectional view of the metal racket frame and the hollow grip having their combined portion placed in the cavity of the lower mold of the matched  
10 molds in the present invention:

Fig. 5 is a cross-sectional view of the metal racket frame and the hollow grip having their combined portion placed in the cavity of the lower mold of the matched molds in the present invention, showing liquid resin  
15 being injected in the cavities:

Fig. 6 is a cross-sectional view of the metal racket frame and the hollow grip having their combined portion placed in the cavity of the lower mold of the matched molds with the liquid resin filled around and solidified  
20 in the present invention;

Fig. 7 is a partial cross-sectional view of the combined portion of the metal racket frame and the hollow grip with the resin solidified in the present invention: and

25 Fig. 8 is an outer view of the combined portion of the metal racket frame and the hollow grip in the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of a method for combining a metal racket frame with a grip in the present invention, as shown in Figs. 1 and 2, includes the following steps.

Step 1: Prepare in advance a bent metal racket frame 10, a hollow grip 20 preset in shape, a proper amount of liquid resin 30 and a matched mold 40 consisting of an upper mold and a lower mold (only illustrated in the Figures). The metal racket frame 10 is properly bent by a mold and has its two lower ends 11 combined symmetrically, with a preset gap 12 formed between the two free ends 11. Then, the two free ends 11 of the metal racket frame 10 have their openings sealed up by means of resin 14 or adhesive tape.

Step 2: The two free ends 11 of the metal racket frame 10 are fitted in the upper end of the hollow 21 of the hollow grip 20, forming an overlapped section (a) at the fitted portion of the metal racket frame 10 and the hollow grip 20, as shown in Fig. 2.

Step 3: The overlapped section (a) of the metal racket frame 10 and the hollow grip 20 is placed in the matched mold 40, as shown in Figs. 3 and 4 (only the lower mold shown). The lower sections 411 of the upper and the lower cavity 41 of the upper and the lower mold of the matched mold 40 forms a round hole of an inner diameter as large as the outer diameter of the hollow

grip 20 when they are combined together, and the upper sections 412 of the upper and the lower cavity 41 of the upper and the lower mold of the matched mold 40 are U-shaped for receiving two ramified sections 15 near the two free ends 11 of the metal racket frame 10, having their upper edges closed. In addition, the upper and the lower cavity 41 are formed with a triangular sealing section 42 between the two ramified sections 15 of the metal racket frame 10, as shown in figs. 3 and 4.

Step 4: After the matched molds 40 are combined together, the matched mold 40 with the metal racket frame 10 and the hollow grip 20 are turned upside down, letting the hollow grip 20 face upward, as shown in Fig. 5.

Step 5: As shown in Fig. 6, inject a proper amount of liquid resin 30 into the interior of the hollow grip 20, letting the liquid resin (30a) fill up the gap 12 between the two free ends 11 of the metal racket frame 10 as well as the space between the gap 12 and the triangular sealing section 42 and also letting the liquid resin (30b) fill up the outer circumferential sides of the two free ends 11 and the gap between the upper end of the hollow grip 20 and the inner wall of the upper and the lower cavity 41, as shown in Fig. 6.

Step 6: After the liquid resin 30 filled in the hollow grip 20 is solidified, open the matched mold 40 and remove the metal racket frame 10 together with the

hollow grip 20 from the matched mold 40, thus the metal racket frame 10 and the hollow grip 20 combined together integrally and smoothly is finished.

As can be understood from the above description,  
5 this invention has the following advantages.

1. The hollow grip 20 only has a small part (about 10%) combined with the metal racket frame 10 by solidified resin 30, while the other part (about 90%) of the hollow grip 20 still remains hollow, greatly  
10 lightening the racket.

2. The racket of this invention is made by combining three different elements together, and the metal racket frame 10 and the hollow grip 20 are combined by means of elastic resin 30; therefore,  
15 vibration of the metal racket frame 10 caused by striking balls can be decreased, having an excellent effect of shock absorption.

3. The metal racket frame 10 and the hollow grip 20 are fitted together in a special way and then confined  
20 in the matched mold 40 and then combined with each other by high-pressured liquid resin 30 injected; therefore, they can be combined together integrally and smoothly.

While the preferred embodiment of the invention  
25 has been described above, it will be recognized and understood that various modifications may be made therein and the appended claims are intended to cover all

such modifications that may fall within the spirit and scope of the invention.